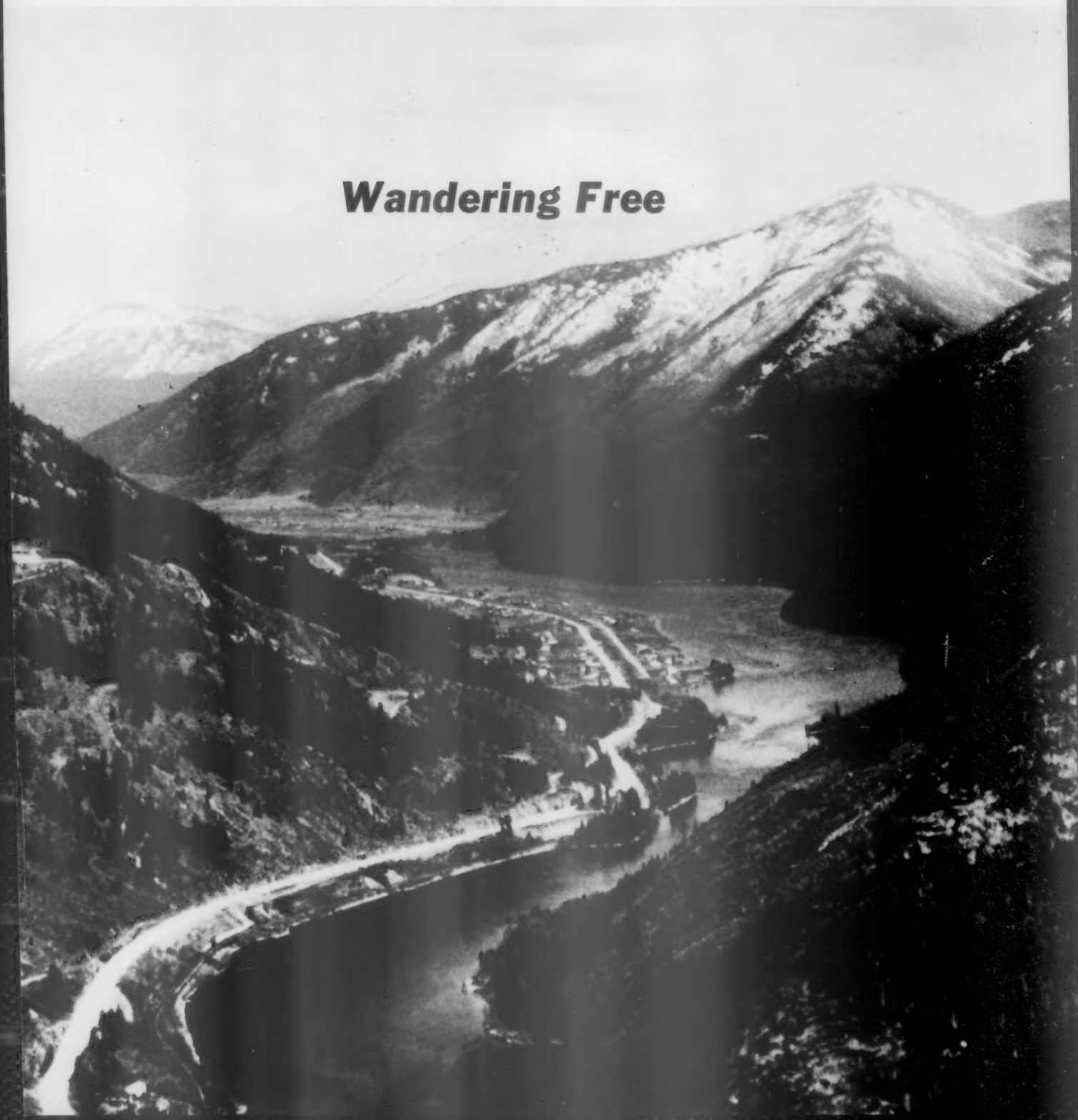
FAA GENERAL AVIATION NEWS

AUGUST 1977

A FLIGHT STANDARDS SAFETY PUBLICATION FOR AIRMEN



Wandering Free

FAA GENERAL AVIATION NEWS

DEPARTMENT OF TRANSPORTATION/FEDERAL AVIATION ADMINISTRATION VOL. 16, NO. 4

CONTENTS/August 1977

3 Once Over Lightly

6 Status of FAR's

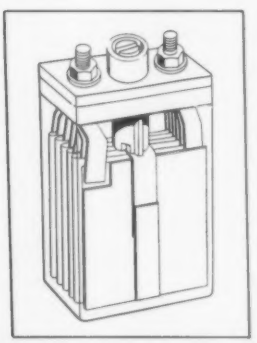
7 The Meticulous Mechanic

8 Flying As An Adventure

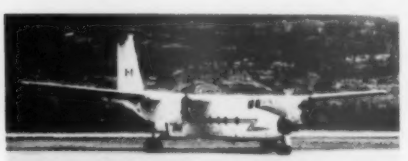
13 Briefs

14 News Log: Potential Hazards of Airborne CB Radios Cited . . . Safety Harness Required . . . Obstruction Rule Reviewed . . . TCA Data on Sectionals . . . Banning Guns at Airports . . . New Equipment Will Improve Terminal Radar Service

15 Flight Forum



Keeping it cool Page 7



Buffalo to the rescue Page 8

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Langhorne Bond, *Administrator, FAA*
R. P. Skully, *Director, Flight Standards Service*
Bernard A. Geier, *Chief General Aviation Division*
David Gelfan, *Editor*
Ruth Taksel Benedict, *Associate Editor*
Louise Oertly, *Assistant Editor*

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Once over lightly

Do you turn a deaf ear when your engine clamors for attention?

When an engine fails in flight there is always a good deal of concern on the part of the pilot, and occasionally some profanity directed toward the antecedents of the engine and the persons who maintained it. But sometimes it would be more correct to say that *the pilot failed the engine,* rather than the other way around. At least, this is what the engine might say, if engines could talk, and the failure was due to negligence in preflighting the aircraft.

Since engines are only machines and cannot testify in inquiries, there are many engine failure accidents where it is difficult to know where to point the finger of blame. But an FAA review of 535 accidents caused by engine failure in 1975 indicated that at least 51 of these accidents were directly attributable to *pilot* failure during the preflight examination. Five of these 51 accidents were fatal, with 17 fatalities. (See "Power Off", FAA GENERAL AVIATION NEWS, July 1977 for full statistical breakdown).

Preflighting an aircraft is a task that many pilots approach with something less than enthusiasm. We all know how important it is, we have been told so many times, and yet many of us do little more than go through the appropriate motions, unless we have reason to suspect a problem. No wonder many obvious signs of trouble go unnoticed.

It is fairly easy to understand that the airman who has relatively little opportunity for flying wants to spend most of his time in the air, not on the ground; but he does not want to spend it in a hospital either. Certainly there are some emergency situations when it is important to get airborne without delay, but these are rare occasions. The simple truth is that many pilots do not find the preflight check an interesting activity. Some find it dull, boring; and a few regard it as a completely meaningless chore. *Why is this?*

One likely reason is that many amateur pilots know very little about the mechanics of an airplane, especially about the engine. Consequently they feel an annoying sense of inadequacy when they look under the cowling and see a maze of tubing, wiring and connecting parts which signify nothing to their eyes. To some it is disturbing to realize or be reminded of how little they know about the power source, so vital to the safety of flight. Consequently they give this part of the preflight short shrift.

Another reason for neglect stems from the fact that by the time the pilot approaches his airplane to look it over he may have already invested quite a few hours in preparing to fly —checking the weather, the routes, filing a flight plan, reserving, and then signing out the plane, etc. If he finds anything wrong with the plane at this point, he may have to scrub the flight, and all of his previous work will become so much wasted effort. So he may be, in a sense, *unconsciously prejudiced against finding fault.*

A third cause of neglect is the attitude of some pilots who believe that the maintenance of the aircraft is really the business of mechanics, not pilots. They have their mind on the clouds, and they do not see why they should be concerned with a frayed wire or an unwanted oil stain. This attitude is most prevalent when the aircraft is rented, and the pilot feels that the fee he is paying entitles him to a fully airworthy aircraft. This may be a fair assumption, businesswise, but it is not a valid reason for entrusting your life to the concern of other persons. Mistakes do happen. Men are not machines.

Finally, there are many occasions when a pilot undertakes a preflight examination of the aircraft that is to take him and his family thousands of feet in the air with a mind full of weighty preoccupations—business troubles, financial problems, health worries, etc. In this frame of mind he can easily overlook items on the aircraft that are virtually screaming for attention. A safe preflight, like a safe flight, requires 100 percent of the pilot's attention. Personal problems will keep until you return—or if they really need immediate attention this is no time to be flying.

Following are half dozen examples of recent typical engine failure accidents involving flights that should never have been undertaken, given the preflight conditions of the aircraft:

* **A LOOSE FUEL CAP.** "It was a foolish mistake, one that only saved me a few seconds of time, and almost cost me my life", the pilot admitted later in his statement to investigators. Instrument rated and with over 1,000 hours logged, he had been making an early morning business flight from Dayton General Airport in Ohio to Columbus where he was to attend a business meeting. He departed Dayton in his own Cessna 210 *Centurion,* and although the weather was VFR there was some slight turbulence aloft. About 20 minutes after takeoff he glanced at his left fuel tank gauge and noticed that it read only half full. *Disturbing because both his tanks had been topped before takeoff.* At first, he felt that the gauge might be acting erratically because of the mild turbulence. But the gauge continued to run rapidly down until it approached the empty mark. He switched to the right tank, but the same thing was happening there. His fuel was somehow being drained out of the aircraft, and in a few minutes he would be without power.

He radioed that he was in trouble, gave his position and stated he was going to make an

A reliable fuel sump drain check includes catching fuel in a container, examining the contents, and double-checking to see that the quick-drain shuts off. It may not be the pilot's favorite job, but there are many convincing arguments for never delegating this responsibility to anyone else. The pilot is looking not only for water, or the wrong type of fuel, but also for small particles that could clog screens and stop the flow of fuel.

emergency landing. An open stretch of road without any traffic on it lay ahead, and he guided the *Centurion* down. On final approach, he lost power completely but landed in control. Just before touchdown a gust of wind caught the highwing plane from the left side, blowing it against a large billboard sign by the side of the road. The airplane cartwheeled, and landed on its back. There was no fire, since the tanks were dry, and the pilot emerged with only minor cuts and bruises.

The subsequent investigation quickly pinpointed the cause of the power loss: the fuel caps were in place, but *loose*. This allowed the airflow around the airplane during the flight to act as a siphon, draining out the fuel. The pilot stated, "I watched my plane being fueled by the line boy. I just didn't bother that morning to check the fuel caps again after he replaced them."

The pilot said that normally he took the caps off to check that the tanks were topped, and then replaced them securely himself. But on this particular day he had his mind on the items to be discussed at his meeting in Columbus, and he was anxious to get started. Also, he had on a new suit of clothes, and was concerned about getting grease on them if he went up the ladder to check the tanks.

He never did make the meeting in Columbus, and his suit went to the ragman.

* **THE CLOGGED CARBURETOR AIR INLET SCREEN.** "I don't think I even knew where it was." The 24-year-old pilot with a total of 110 hours had taken off in a Piper PA 22 *Tripacer*, a club airplane, from a small airstrip in Iowa accompanied by his girlfriend. He started to climb out but he got only to an altitude of about 100 feet when the engine began to lose power and then stopped abruptly. He immediately applied carburetor heat, but that did not help, and then the engine stopped completely. From that low altitude the pilot tried to maneuver the airplane down into a field, but there were simply too many trees around and he struck a large spruce on the way down. The aircraft then struck the ground with the left wing tip and spun around into a hillside. Neither the pilot nor his passenger were seriously injured, but the airplane was demolished.

During the investigation it was discovered that the carburetor air inlet screen was clogged with dead leaves. (The aircraft had been tied down next to a peach orchard). The result was, expectedly, that there was an insufficient air flow for the engine, improper fuel/air mixture, and a dead prop.

The problem could have been missed on the walk-around by anyone who did not trouble to look for debris *inside the air scoop*, where it is likely to collect (and be thrown against the screen in flight). The pilot maintained that he had performed a complete preflight check—"rather quickly I think"—but did not recall actually looking, or feeling, inside the scoop. He said that his passengers had been asking him some questions about the airplane during the preflight, and it was possible he had been "somewhat distracted". The airplane, consequently, was "somewhat destroyed". Incidentally, promptly applying full carburetor heat, (which bypasses the screen) might have saved the airplane.

* **FOULED SPARK PLUGS.** The pilot was an ex-military flyer who now managed a restaurant and flew for pleasure in a Cessna *Skylane*. On the day of the accident he filed a flight plan from Taos, N.M. to Denver and departed shortly before noon. Half an hour into the flight the engine began to sputter intermittently, then continuously, and finally quit. The pilot checked his fuel selector, mixture control, and applied carburetor heat, without effect. The pilot radioed for assistance, gave his position and pancaked the aircraft down in a shrub-covered valley. He was uninjured, but one of his passengers suffered a broken nose.

No cause for the malfunction was found at the site. The spark plugs were removed and tested in a laboratory. They were all badly fouled and only four of the twelve plugs would fire. The engine had been operated for 89 hours since its last annual inspection.

Questioned about engine performance during preflight run-up, the pilot acknowledged that he had experienced "a lot of trouble" getting the engine to run smoothly prior to takeoff. "I figured I had a fouled plug or two that would burn off clean under full power—didn't see any reason to pull the plugs."

Obviously, the engine had been trying to tell him something, but he was not listening.

* **FUEL CONTAMINATION.** "It looked all right to me, but I guess I didn't look closely enough", she said. She was a housewife, the mother of three children, and she had been flying for about five years. Her accident occurred when she was taking off from a small airport in Indiana, with all three children on board. At an altitude of 150 feet she observed that the engine was losing power and there was a marked decrease in rpm's. Carburetor heat did not improve the situation, and she had to make a forced landing in a cornfield. The pilot and her children all received minor bruises; the aircraft was severely damaged.

The accident investigation disclosed clogged fuel screens. The fuel was found to contain "fine debris", a type of fuel contamination associated with a poor fuel source. In this case draining even a large quantity of fuel from the sumps will not provide a remedy for the problem; the only cure is to have a qualified mechanic drain and clean the entire fuel system. However, had the pilot examined the fuel she drained from the sumps she might have been alerted that a mechanic's service was needed before takeoff.

The pilot acknowledged that she had been concerned about the children playing around the aircraft while she was preparing for the flight, since other aircraft were moving in the area, and she had intended to make them stay inside the airplane but "It was just too hot". She had drained "at least a pint" of fuel from the sump, she said, but not into a container, since she could not find the bottle she normally used for this purpose, and thought someone

might have thrown it out. (She learned later that her boy had returned it for the ten-cent deposit.)

*** A HOLE IN THE MUFFLER.** During a flight in a *Bonanza* the pilot had just taken off when a fire broke out in the engine. With the flames licking back over the cabin, he quickly got the burning plane down in an open field, and jumped out of the airplane before the rollout was finished. He suffered a broken leg, and the aircraft was destroyed by the fire.

The accident investigators found a break in the muffler covering an area about 6 by 4 inches, and concluded that the fire was caused by hot engine exhaust gases which were vented directly into the engine section and came in contact with a flammable substance.

"I'm what you'd call your typical Sunday pilot, I imagine", the pilot said. "Only I don't fly every Sunday. Maybe about once a month. That plane I flew was a rented one, and I felt sure old Charlie kept everything in good shape. I did a careful preflight just the same, and if there was any hole in the pipes I'd have seen it."

He remembered that the engine had backfired once rather loudly during the run-up (evidently blasting open the muffler), but he had not been concerned as the engine continued to run well ". . . maybe a mite noisy." Again, an example of the engine saying something important in a language the pilot did not understand.

*** BLOCKED FUEL TANK VENT LINE.** "It wasn't on my checklist, and so I didn't check it."

True enough, inspecting the fuel vent for possible blockage may not be on the checklists, but a little dab of mud in the opening, placed there by an insect weighing a fraction of an ounce, can bring down a 2,000 lb. airplane. In this case the aircraft was a Stearman biplane, refurbished with loving care and considerable expense. The pilot had been airborne about six minutes on a shakedown flight when he experienced power loss and was unable to restart the engine. He was flying over a residential area, so he attempted to land on a road, but shattered a wing against a power pole. He was not injured, but miserably grief-stricken at the condition of his beloved airplane.

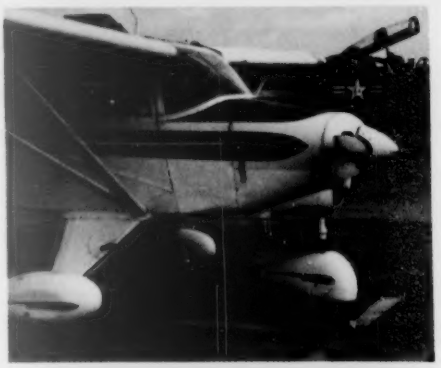
The investigation revealed that a mud dauber (insect) had clogged the fuel tank vent line, preventing air from entering the tank. Without air in the tank the fuel could not be displaced so that it could flow to the engine, and the engine was effectively starved of the fuel on board.

On this particular aircraft the vent is a small curved tube on top of the upper wing. The vent is placed in various other locations in other aircraft. Knowledgeable airplane owners and pilots regularly examine it, and if they have any reason to think it may be blocked, check by blowing through it (by mouth). Aircraft that have been sitting idle are particularly suspect in this regard.

One factor that is common to all of these accidents is the attitude of the pilot toward the airplane. Some pilots tend to forget that an airplane is only a machine, that it has no way of telling you when something is wrong or "hurts" except in terms of noise, disfigurement or performance degradation. They also forget that a machine, unlike a person, has *no means of repairing its own damage or deterioration.* No matter how well it is protected or how carefully it is flown or not flown, every airplane begins to deteriorate from the moment it leaves the factory, and continues to do so all its life. The rate of deterioration can be slowed down considerably by good care, but no aircraft remains exactly the same from one day to the next. When the changes in its condition become perceptible, that is the time for the pilot to see that appropriate remedial action is taken.

A stitch in time . . . can save your whole family.

(Editor's note: The next article in this series will cover engine failure induced by pilot errors in flight.)



Top—*Citabria* pilot checks fuel caps for tightness—even though he clearly saw the line man replace them after refueling the aircraft. Center—*Tripacer's* airscoop is a natural deposit area for wind-blown trash. Bottom—Idle aircraft with dry tanks are most likely to have fuel vents sealed by insects.

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The Case of

The Meticulous Mechanic

Pilot Richard Wartinger was nearing Dayton General Airport in the *Aero Commander* when he began his instrument approach.

He switched in the ILS frequency and turned the airplane toward the localizer needle. The glide slope bar was firmly centered —a bit too firmly, he thought, for an aircraft that had not yet established a glide angle. He checked the frequency and concluded that the instrument, which had just been checked out in his own shop, was not functioning. The red flag on the indicator provided confirmation.

Fortunately that instrument approach was only a simulated one, part of the in-flight avionics check that follows every annual aircraft inspection conducted by the mechanics at the shop where he is chief inspector. He landed the *Commander* and began a personal check of the instrument, beginning with the attach points. The problem was discovered very quickly: the glide path antenna lead was disconnected. During the inspection the antenna lead at the nose of the aircraft had been disconnected to remove the dome, and had not been reattached. Wartinger connected it again and took the airplane for another test flight, at which time the glide scope indicator worked perfectly. That flight test had prevented the possibility of a pilot first discovering that his glide scope indicator was not working during an actual instrument approach, perhaps in hazardous conditions.

Test flights like this at the end of an annual or 100 hour inspection are one of the items that Wartinger has made part of the special inspection check list he devised for his shop at Dayton General. "It's extra work," he admits, "but who knows? Maybe it saves somebody's neck."

The flight test after an annual inspection is not required by Federal Aviation Regulations, nor is it included on most manufacturer's inspection checklists. But Wartinger feels certain there are many avionic devices, which can only be satisfactorily checked in the air. He is a maintenance man with a concern for people who fly airplanes.

His long and conscientious career in aviation was recognized this year when he was named national winner of the Aviation Mechanic Safety Award, at a ceremony in Washington, D.C., when he was presented with gifts including cash, tools and travel expenses by industry representatives.

Wartinger was born in 1925 in Dayton, Ohio, the home of the Wright brothers. His father was an auto mechanic, who had been offered a job as a mechanic by Orville Wright, but considered it too risky. Richard Wartinger developed an early enthusiasm for airplanes, and by the time he was in the 8th grade he had constructed the largest gas model airplane in the Dayton area. He attended Wilbur Wright High School, and after graduation in 1943 he joined the Navy and trained as an aviation machinists mate.

When he returned from service he attended the Spartan School of Aeronautics in Tulsa, Oklahoma, and was certified as an A & P mechanic. A few years later he received his Inspection Authorization. Using the G.I. Bill of Rights, he obtained his private pilot's license in 1948, and over the years he increased his proficiency: He has a commercial pilot's license, with single and multiengine land ratings, and single engine sea rating. He has logged over 3,000 hours.

After graduating from mechanic's school, he returned to Dayton, took a job as an aviation mechanic, and eventually rose to be service manager and chief inspector at Fliteways Air Service, a large fixed base operation. Since 1959 he has been an FAA designated maintenance examiner.

Wartinger was nominated for his award not merely for his meticulous concern for flight checking the work done in his shop, but also because he has built a reputation for solving annoying and hazardous problems of his clients with low-cost but effective "fixes". One such problem that drew his attention several years ago was the concern of some of his clients (who owned *Aero Commanders*), that the ni-cad batteries they were using could overheat on take-off in hot weather, after the batteries were used to start the engines.

Because ni-cad batteries discharge at a high rate under these circumstances, and then recharge at an equally high rate after the engines are running, this high activity within the battery can be accompanied by a rapid rise in temperature if the battery has not been maintained properly. Since there is little flow of air over the battery for cooling at this stage of flight, the possibility exists of a thermal runaway—overheating leading to fire—which had resulted in several serious accidents.

Wartinger found it a relatively simple matter to pipe cool air from the air conditioning system of the *Commander* to the battery, greatly reducing the threat of thermal runaway. This fix, which required only a small amount of tubing, was approved by FAA and the manufacturer of the aircraft. *Result: safer aircraft, happier pilots.*

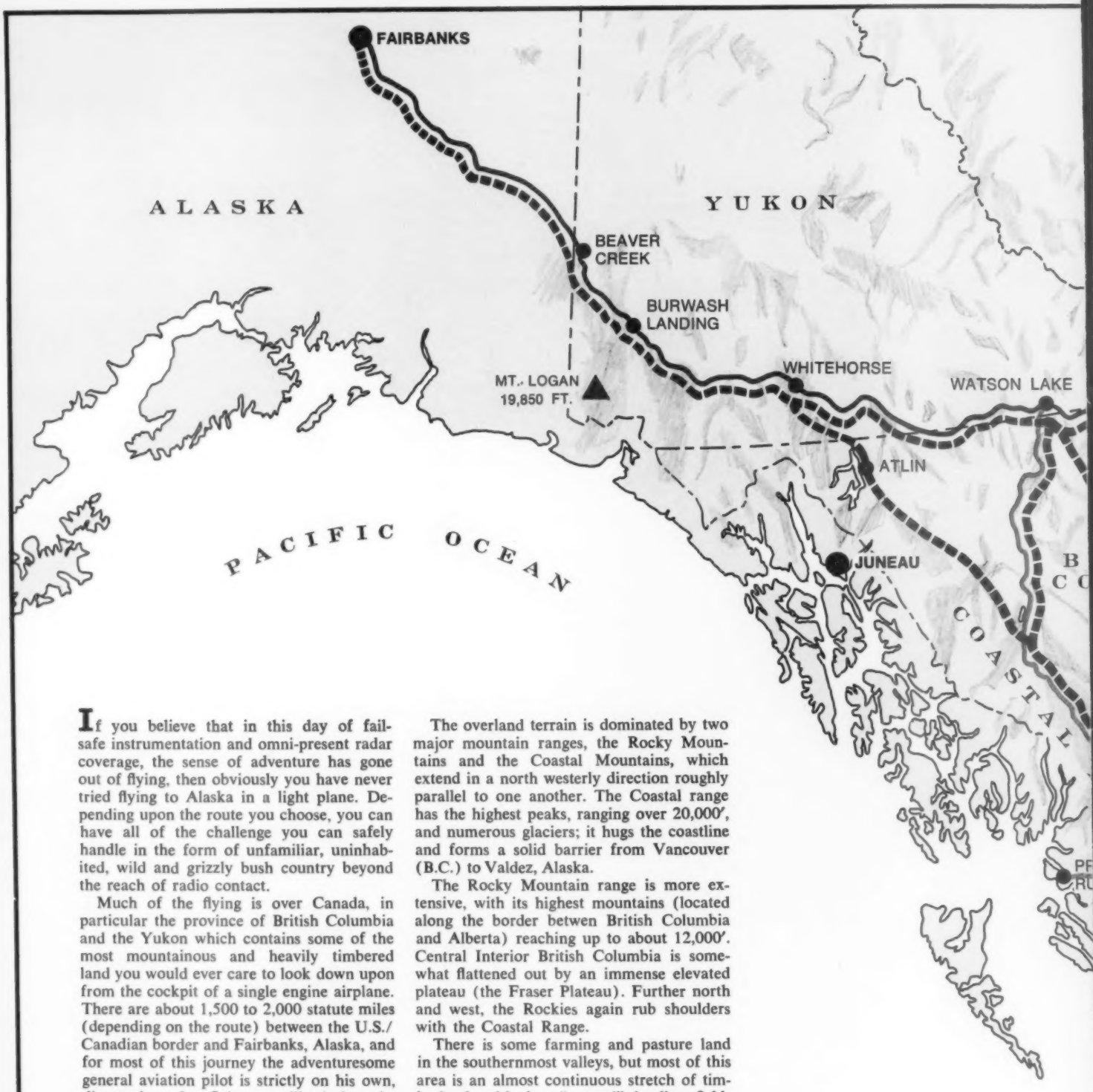
Another type of problem was presented to Wartinger by an airplane owner who flew his aircraft to Fliteways' shop from several states away. On an earlier flight the elevator control had jammed in flight, and could not be moved in either direction. Only by some adroit flying was the pilot able to get it down without an accident. But on the ground the elevator worked smoothly again. A local mechanic had worked on the airplane a total of six hours but was not able to discover anything wrong with the elevator control. Still the owner was afraid to fly the plane.

Wartinger studied the problem and concluded that the stop bolt in the left vertical fin had fallen out of its retaining structure in flight and had become jammed against the elevator control rod, preventing its movement. Upon landing, the stop bolt had dropped free, allowing for normal elevator movement again. Wartinger not only put in a new stop bolt, but also designed an inspection plate so that stop bolt assemblies could be easily examined.

On a hunch he began to inspect all similar aircraft in his shop. He found damage to the assembly in *six of the first eight aircraft he examined.* Apparently during extremely windy and gusty conditions, when the elevator sometimes traveled rapidly from full up to full down position, the large counterweights acted as a sort of hammer pounding against the stop assembly, and damaging the stop bolt. He filed a Malfunction or Defect report with FAA, and his recommended fix —the inspection plate, which allowed easy access to the assembly—was published in FAA's General Aviation Inspection Aids Summary.

Two years ago Dick Wartinger was made a vice president of Fliteways, in addition to continuing as chief inspector and service manager. The firm has 50 employees, including 12 A & P mechanics, and his reputation for meticulous service brings aircraft owners to him from a wide multi-state area in the midwest. They know he will never approve an aircraft for return to service before he is willing to trust his own life in it.

That's pretty good insurance.



If you believe that in this day of fail-safe instrumentation and omni-present radar coverage, the sense of adventure has gone out of flying, then obviously you have never tried flying to Alaska in a light plane. Depending upon the route you choose, you can have all of the challenge you can safely handle in the form of unfamiliar, uninhabited, wild and grizzly bush country beyond the reach of radio contact.

Much of the flying is over Canada, in particular the province of British Columbia and the Yukon which contains some of the most mountainous and heavily timbered land you would ever care to look down upon from the cockpit of a single engine airplane. There are about 1,500 to 2,000 statute miles (depending on the route) between the U.S./Canadian border and Fairbanks, Alaska, and for most of this journey the adventuresome general aviation pilot is strictly on his own, discovering what flying was like before the advent of radio navigation. He is also apt to discover just how good a pilot he really is.

(Note: an earlier article, in the July issue, discussed the information and experience needed to fly safely to Alaska, and described the overwater route. The present article is concerned with "bush flying", the overland routes, and additional details of flying in Canada.)

The overland terrain is dominated by two major mountain ranges, the Rocky Mountains and the Coastal Mountains, which extend in a north westerly direction roughly parallel to one another. The Coastal range has the highest peaks, ranging over 20,000′, and numerous glaciers; it hugs the coastline and forms a solid barrier from Vancouver (B.C.) to Valdez, Alaska.

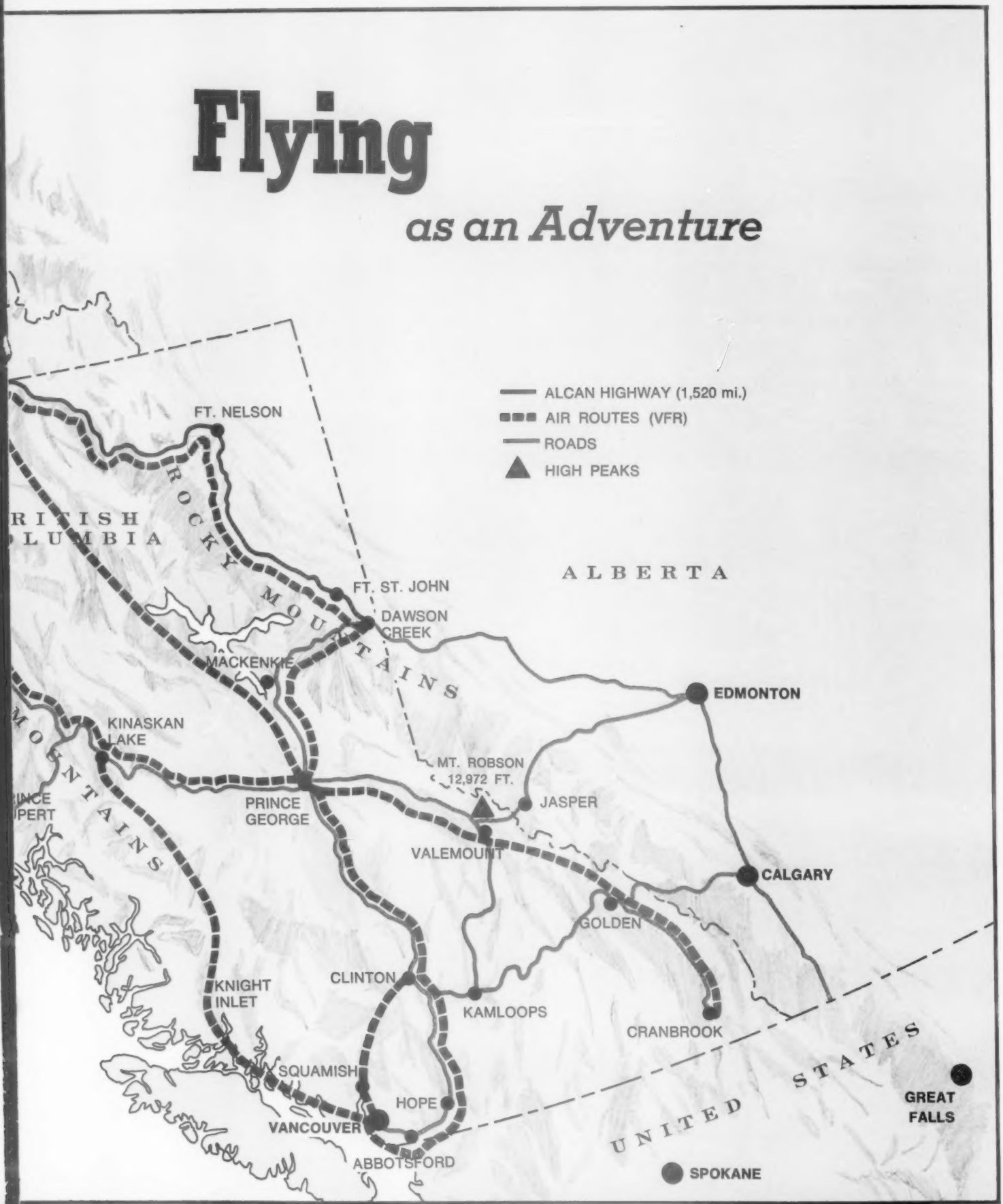
The Rocky Mountain range is more extensive, with its highest mountains (located along the border betwen British Columbia and Alberta) reaching up to about 12,000′. Central Interior British Columbia is somewhat flattened out by an immense elevated plateau (the Fraser Plateau). Further north and west, the Rockies again rub shoulders with the Coastal Range.

There is some farming and pasture land in the southernmost valleys, but most of this area is an almost continuous stretch of timberland, with few "natural" landing fields for wheel planes, even for tail draggers. There are countless lakes and valleys, but few roads, and some of these may be abandoned logging trails. Human habitations are few and far apart, and wild animals form the dominant population. Great country to visit, but no place to get lost in.

Alaska or Yukon-bound pilots who originate their flights in the United States east of

Flying

as an Adventure



Caution: Map is not drawn to scale.

the Rockies usually make Calgary, Alberta, their point of entry into Canada. Incidentally, while Customs officers are normally on duty at airports of entry from 8:00 a.m. to 5:00 p.m. daily, it is always a good idea to check on this by phone, especially at the smaller airports, because there is some local variance from the rule; and if no Customs official is available when you arrive you may not be allowed to continue until the next day—unless you are willing to pay a stiff fee for overtime.

From Calgary to Dawson Creek, if you follow the main highway via Edmonton, it is a 550 mile flight (all mileage given here will be statute) over fairly open, flat land, with no problems to be expected. Dawson Creek (not to be confused with Dawson in the Klondike), just inside the British Columbia border, is the starting point of the 1,520 mile Alcan Highway that leads to Fairbanks. This narrow twisting ribbon of gravel is the lifeline that keeps most Alaska-bound pilots on course, and provides them with an emergency landing area. However, since 1970 some 44 U.S. registered aircraft have gone down along the Canadian segment of this road, with 22 fatalities.

The Alcan highway was carved across the Rockies at an average elevation of about 2,500′ above sea level. It forms the floor of a "corridor" with an average width of about six or seven miles, and with walls that have an average height of about 5,500′ ASL.

Miles (or kilometers) post number one is at Dawson Creek, but flight planning is better accomplished at Fort St. John, a short 47 mile hop away. St. John has an Aeradio Station for flight assistance and trained meteorologists for weather briefings.

For the 300 mile flight on to Fort Nelson from St. John, the VFR pilot can fly directly along the airway (remembering that he must remain below 12,500′ ASL), or along the highway. En route, the terrain rises imperceptively, and at Midway the road elevation is considerably higher than at St. John or Nelson; pilots have been trapped by weather in this area and some prefer to follow the railroad which permits flying at a lower altitude. In July of this year, a U.S. pilot who had flown the route many times, but was not instrument rated, was caught by a lowering overcast in this segment, attempted to climb on top, and crashed into the side of Pink Mountain: four fatalities.

After Fort Nelson the highway begins its westward penetration of the Rockies, and is soon overshadowed by mountain peaks of over 7,500 feet. There is both communications and navigational radio along the remainder of the route (low frequency as well as VHF in Canada), but the VFR pilot who is flying within the corridor will have inconsistant contact with radio stations at best, because of the terrain. Clouds tend to form along the peaks and frequently solidify into an overcast that may force the unwary VFR pilot into a collision with rising ground.

The 300 mile stretch between Fort Nelson and Watson Lake is notorious for very abrupt changes in weather, from blue skies to complete overcast, from calm air to severe turbulence and windshear which can result in loss of control if the pilot does not anticipate the problem soon enough.

Near Muncho Lake the highway makes a right angle turn and several pilots have become lost and crashed after missing this turn and following an old mining road. Some bush pilots prefer to fly north along the Fort Nelson river valley instead of the Alcan Highway and then head west over the Liard River until it joins the road. Again, the advantage is a lower flight altitude, plus less turbulence, but there are no landing fields there.

An accident all too typical of the region occurred to a U.S. pilot returning from Fairbanks last May. Weather had been good along his southbound route as far as Watson Lake, where he received reports of rain, snow and low fog (at treetop level at some points near Summit Lake). The pilot, flying alone, decided to have a look for himself, proceeded as far as the lake, then attempted to turn back, but unfortunately flew the aircraft into rising ground. It was 11 days before aircraft from the Rescue Coordination Centre at Victoria located the wreckage. The pilot had been killed on impact.

The next segment presents the pilot with an even narrower corridor, as the Alcan Highway weaves its way between 6,000 and 7,000 foot peaks along the British Columbia-Yukon border, and then moves sharply northwest in the direction of Whitehorse (Milepost 919). Adverse atmospheric and mineral conditions, as well as terrain obstacles, frequently interrupt radio signals for low-flying aircraft. Nevertheless most pilots of light planes find that their greatest safety lies in flying low enough to keep the highway clearly in view, and to thereby avoid wandering off over old logging roads or apparent short cuts.

Leaving Whitehorse, pilots must take care not to be misled by the northerly route (to Braeburn) but to follow the Alcan Highway as it moves northwest to Burwash and to Beaver Creek near the Alaskan border (Milepost 1315). Between the highway and the Pacific coast extends an enormous glacier field hundreds of miles long, dominated by Mount Logan (19,850′). But to the northwest, in the direction of Fairbanks, a broad river valley opens up, affording the pilot normally uninterrupted VOR radio navigation the remainder of the route.

The major points along the Canadian segment of this route also have VOR radio, as well as non-directional beacons, but their utilization depends upon the altitude of the aircraft and the atmospheric conditions. Well-equipped airports are located at Whitehorse, Watson Lake, Fort Nelson, and Fort St. John, supported by ground stations offering flight assistance and weather information. The "Aeradio Station" is the Canadian counterpart of our flight service station, providing similar services to pilots, including, at some locations, "Preflight Weather Information Service." Weather briefings are provided, also, by separate weather offices or stations often colocated.

Some 57 Weather Offices across Canada maintain a display of aviation weather information for preflight planning, including current reports, forecasts, and weather maps. Briefing is provided by a trained meteorological technician. These Offices are located at the larger airports only. At other airports, current weather reports and forecasts may be available from a Weather *Station* or an Aeradio Station; at certain periods a personal briefing at these stations may not be possible, and pilots will be expected to make use of a self-briefing display.

Scheduled weather broadcasts are made twice each hour by Aeradio stations on the voice facility of the Low/Medium Frequency NAVAID. *Note that this broadcast can be picked up by the ADF receiver, but not by the OMNI receiver.* The information

is confined to local and nearby weather reports, and SIGMET messages. Aeradio Stations may be contacted in flight (on frequency 122.2 or 126.7) for current weather or terminal forecasts. Frequency 122.2 is also used for air-to-air communications. As in the United States, 122.8 is the usual UNICOM frequency.

The Aeradio Station is an invaluable source of information about local flying conditions, and a personal visit is recommended. Knowledge of radio signal outages, fuel availability, terrain or runway damage and all manner of local flying lore can be very important to the visiting pilot.

Few U.S. pilots realize the importance of making the trip north in easy stages. Dr. Ian Scott, medical officer for Canada's western region, estimates that two hours of low altitude navigation along the Alcan Highway can be the stress equivalent of a full days flying in the states. He also suggests that the different environmental and social conditions encountered in the far north place additional stress on the pilot and could impair his flying unless he deliberately "paces" himself and refuses to hurry or fly in marginal weather. For many experienced pilots VFR along the Alcan Highway means a 5,000′ ceiling and five miles of visibility. Scattered clouds that are easily dodged in open country, can be a menace in a narrow canyon.

Alaska-bound pilots of flights originating west of the Rockies have two basic alternative routes to follow, depending upon whether they cross the border into Canada along the Pacific coast, or inland. If they cross in the vicinity of Spokane, they may elect to make their first Canadian stop at Cranbrook, and then fly toward Alaska along one of the several river valleys that run parallel to the Rockies in British Columbia.

The longest of these valleys, known as "The Rocky Mountain Trench", runs from the vicinity of Cranbrook in the southwest corner of the province to Prince George—450 miles. The highest ground elevation is 4,000 feet ASL, the minimum recommended en route altitude is 5,000 feet ASL. Most of the route follows a highway, river and railroad, so that it is difficult to get lost. Good radio facilities (VHF and non-directional beacon) are located at either end. Broadcast radio stations are at two midway points, Golden (CBX, 1240) and Valemont (CBRI, 1240).

There is one 100 mile segment, between Boat Encampment and Valemont, where there is no highway or railroad below, only a narrow river winding its way through wild mountainous terrain. Weather is changeable here, and severe turbulence is possible at any point. Pilots of light aircraft should be constantly alert for rapidly lowering ceilings. There is a continuing highway from Valemont to Prince George.

From Prince George, the preferred route is to follow the highway and railroad to Fort St. John and continue up the Alcan Highway. Pine Pass, midway between Prince George and St. John, although not very high, is noted for strong winds, at times associated with severe turbulence. A combination of low altitude turbulence and very strong winds aloft can make this pass virtually *impassable* for light aircraft on occasion. At such times it may be necessary to detour around the mountains by following the Peace River westward to Hudson Hope and then following the northernmost segment of the "Trench" on up to Watson Lake and the Alcan Highway.

Continuing along the "Trench" from Prince George to Watson Lake is a short cut to Alaska that follows a clear valley all the way. However, except for the first 100 miles, between Prince George and Mackenzie, there is no highway. Between Mackenzie and Watson Lake, a distance of about 390 miles, there are no radio aids, no fuel, and only small or emergency airstrips; and some of these are not easy to spot from the air. Pilots intending to fly over this route are urged to stop at Prince George and get a careful updated flight briefing at the Aeradio Station and a weather briefing as well. Mackenzie Lake has a good airport with ADF and UNICOM *but no* VOR.

This route is recommended in good weather only—and in daylight hours. Storms materialize quickly, and snow is possible during any month. In late March of 1977 an American pilot enroute to Alaska ran out of daylight in this area, got caught in a snow shower, became lost and suffered a fatal crash. Familiar with the route from considerable previous experience, the pilot was attempting a solo flight of over 1,000 miles, from the U.S. border to Watson Lake in a single day. His *Tripacer* was well supplied with survival gear, but he had no low frequency or ADF radio, only VHF and VOR. He refueled at Mackenzie and filed a flight plan, estimating time of arrival at Watson Lake at 8:39 p.m. He departed at 5:39 p.m., with less than one hour of daylight remaining.

At 8:20 p.m. Watson Lake Aeradio Station was notified by an Air Carrier Jet en route to Whitehorse of a distress call received from the *TriPacer*, which had apparently struck a tree while flying in snow showers and was crippled, although still airborne at the time of the report. There was no further communication from the distressed plane. The Aeradio Station promptly notified the Rescue Coordination Centre at Victoria, B.C., and a search and rescue effort was begun. The downed aircraft was located the next day, but the pilot had apparently died in the crash. The location of the crash site suggested that the pilot had mistakenly wandered out of the "Trench" approximately 60 miles south of Watson Lake, after visibility had been significantly reduced by failing light and worsened weather. Damage to the ELT antenna on impact had weakened the signal and delayed location of the aircraft.

From Prince George it is also possible to head west, following a highway some 100 miles to Smithers, and then fly north to Watson Lake by way of Bell-Irving Pass and Kinaskan Lake. The pass is narrow and about 30 miles long, at an elevation of 4,000 feet ASL. (Minimum recommended en route altitude is 5,000 feet ASL.) The adjoining mountains are over 10,000 feet, and the pass area is notorious for bad weather. Beyond the pass there are no airstrips except for one about 15 miles south of Kinaskan Lake, and no NAVAIDS. HF on 5680 Hz is effective generally for radio communications.

There are three airstrips along the 192 miles from Kinaskan Lake to Watson Lake on the Alcan Highway; no radio or NAVAIDs exist en route. If the weather is clear, it is also possible to fly directly from Kinaskan Lake to Whitehorse via Atlin, some 275 miles over very high terrain, with one small airstrip at Telegraph Creek. Recommended en route altitude is 7,000 feet ASL. Again there are no radio or NAVAID in-

Canadian SAR *Buffalo* making a low pass over rough terrain during a search mission.

stallations along the route. There are numerous lakes suitable for seaplane use.

U. S. pilots crossing the Canadian border in the vicinity of Vancouver can make their way north to Prince George and the Alcan Highway over several recommended routes. The normal route for wheel-equipped VFR aircraft proceeds east from Vancouver along the Fraser River Valley for 85 miles to Hope, and then heads directly north by way of Clinton to Prince George, a distance of 445 miles. This route follows Transport Canada airways, and main highways and rivers for the entire distance. VOR communications are good and full facility airports are located at Abbotsford, Williams Lake, and Quesnel. There are private airstrips at Cache Creek, Clinton, Green Lake, 100 Mile House and 108 Mile House, and several emergency strips in between. From Vancouver to Hope the suggested minimum altitude is 3,000 feet ASL, and from Hope to Cache Creek it is 5,000 feet ASL.

The latter segment is bordered by mountain ranges which separate moist coastal air from the normally dry air of the interior, making the area subject to rapid weather changes, sudden wind shifts and extreme turbulence. Strong downflow conditions can be anticipated in the vicinity of Lytton, due to a funneling effect in the valley. The Lytton airstrip can be made difficult by quick wind shifts and turbulent downflowing air, especially on very hot summer days.

This route should not be used in deteriorating weather or when the cloud cover is below 5,000 ASL, as the weather may change in minutes and close in to the surface. Several accidents have occurred in recent years under these conditions when pilots, instead of landing or turning back, attempted to detour through side canyons and were boxed in.

One such accident which occurred last year in June involved the pilot of a *Cherokee* who was trapped by rapidly rising ground and lowering clouds. Apparently the pilot flew directly into a ridge when the latter was obscured by the clouds, and appeared to be an open pass. All three persons on board perished. The wreckage was not found for a week, partly because the impact had severed the ELT from its antenna.

From Cache Creek to Prince George the route is over rolling country that forms the Central Interior Plateau. Below 5,000′ ASL radio navigation can be tricky, due to terrain contours mineral deposits and atmospheric conditions. For the visiting pilot, there are few recognizable landmarks. After Williams Lake, navigation is easier as the route rejoins the Fraser River Valley.

An alternate and somewhat shorter way to the central interior route is to fly west and north from Vancouver by way of Squamish, Pemberton, D'Arcy and Clinton, and then continue to Prince George along the Fraser Valley. This route is more suitable for float-equipped aircraft, as there are more water landing sites available than land strips. VHF communications are not effective here below 8,000′ ASL and there are no navigational aids available at lower altitudes. There is no road between D'Arcy and Clinton. The highest point along the route (Alta Lake, between Squamish and Pemberton) is usually the bottleneck in adverse weather. Some of the mountains in this area are permanently snow-capped.

Another westerly "overland" route out of Vancouver that is primarily recommended for floatplanes follows the Strait of Georgia as far as Knight Inlet, and then veers north to Smithers, Kinaskan Lake, and on to Watson or Whitehorse. From the Campbell River, at the head of Knight Inlet, the distance to Smithers is about 295 miles. The first 70 miles takes you through a narrow pass in the Coastal Mountains ringed by high mountains (over 100,000), with a minimum recommended en route altitude of 5,000′ ASL. After the pass the route follows more open country to Smithers, and ADF (230) or VHF (122.2) radio communications are usually effective all the way. This is the shortest of the three VFR routes to Whitehorse, approximately 955 miles, but it is recommended only for pilots of float planes who have had experience in flying over remote bush country—and then never in bad weather. The intermittent loss of radio communications, absence of recognizable landmarks, the changeability of the weather, the rugged terrain and scarcity of human habitation—all of these conditions create a flying environment which demands much more of the usual vacationing pilot than is required by the kind of flying he is accustomed to in the United States. Errors are apt to be costly, particularly errors of judgment regarding weather or disregard for regulations or procedural recommendations that are designed to ensure the safety of flight.

Perhaps the most serious and costly temptation for U.S. pilots is to continue a flight in uncertain weather by going VFR on top (illegal in Canada), then failing to find a suitable "hole" for a descent when fuel begins to run low. Pilots who attempt this operation may be buoyed by the belief that if they get into trouble some air traffic ground facility will be able to help them descend safely with radar or direction finder vectors. This is no uncommon experience in the United States, but in the sparsely settled country north of the Canadian border it is likely to be an illusion—the necessary facilities or terrain conditions simply are often not there.

A case in point involved a father and son, both pilots, who had flown to Alaska in a Cessna 180 on a fishing trip in the spring of 1973. On their return flight, they entered Canada via the Alcan Highway route and on June 23 departed Whitehorse intending to fly to Smithers and Vancouver via Atlin Lake. As they were crossing over the Yukon/B.C. border they were unable to maintain a minimum recommended VFR altitude, because of the lowering ceiling, and decided to climb on top.

After two hours on top, the pilots were uncertain of their position, and decided to descend through a break in the clouds to apparent VFR conditions below. They broke out of the clouds at about 300′ above the ground in a canyon, attempted to climb out, stalled, and crash-landed in a river. The father, in a dazed condition, managed to swim to shore, but could find no trace of his son. After an exhausting search of many hours, (the river was heavy with glacier silt, and extremely cold), he salvaged an axe from the wreckage of the plane and began a trek downstream, hoping to come to the lake. The country was heavily wooded and mountainous, so he stayed close to the stream, managed to catch an occasional fish, which he ate raw, and built a camp each night out of logs and brush. He also laid out a large SOS, either of logs

or gravel, whenever he came to a broad clearing; he had no means of lighting a fire. A search pilot eventually picked up his trail of SOS signals, and the ragged, worn and chilled survivor was rescued by helicopter three weeks and two days after the crash. The aircraft was later located but the son was never found.

All of the routes over Canada to Alaska have some potential hazards for pilots who are used to depending upon constant NAVAID assistance or radar vectoring. This does not mean, however, that such flight over the north country is necessarily dangerous. If you are properly prepared and equipped, capable of evaluating the problems you encounter en route, and able to make reasonably sound decisions on your own, you should have no difficulty whatever. The journey may take longer than you had expected but the rewards may be much greater than you could have imagined. Learning to look out for yourself, your companions and your airplane with little or no assistance from ground facilities is an experience that can make you a better, safer pilot wherever you fly—over primitive mountains or over your own backyard.

And you will have learned how to restore the sense of adventure to flying, without sacrificing safety or peace of mind.

CANADIAN TERMINOLOGY
(Partial List)

Aerodrome
Any area of land or water set apart for the arrival and departure, movement or servicing of aircraft.

Aerodrome Traffic Zone
An airspace of defined dimensions extending upwards vertically from the surface of the earth (up to 4000′ AGL).

Airport
An aerodrome licensed by the Ministry of Transport.

Circuit
Landing or departure patterns of an aerodrome.

Control Zone
A controlled airspace of defined dimensions extending upwards vertically from the surface of the earth (normally up to 4000′ AGL).

Danger Area
An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

High Level Airspace
All airspace within the Canadian domestic airspace at or above 18,000′ ASL.

Low Level Airspace
All airspace within the Canadian Domestic Airspace below 18,000′ ASL.

Military Flying Area
An airspace of defined dimensions within the High Level Airspace designated for the use of Military Training and Testing.

(Prepared with the generous assistance of Transport Canada, Pacific and Western Regions.)

BRIEFS

ALL ABOUT AIRSHOWS. Persons who are considering sponsoring an airshow will be interested in an updated FAA Advisory Circular that gives guidelines for planning such an event and also explains how to go about obtaining the necessary "airshow waiver" from FAA. It is FAA policy to issue airshow waivers whenever it can be determined that the airshow will not jeopardize public safety. Subjects discussed include site selection (either on or off airport); types of aircraft and performers; policing; emergency facilities; air and surface traffic; activities; monitoring of operations; and potential industry assistance. "Airshow Waivers" (AC 91-45A) is free.

ROGER. Pilots are cautioned to be extremely attentive to instructions issued by Air Traffic Control, and if there is even the slightest doubt about a clearance or instruction, clarification should be sought at once. A number of incidents and accidents appear to have been caused, at least in part, by pilots not adhering to ATC clearances. Some of the pilots simply misunderstood the transmission. Some erroneously assumed that a clearance was issued when it was not. In some cases pilots attempted to comply with a clearance meant for another aircraft. Latest issue of Airman's Information Manual, Part 1, recommends that pilots read back those parts of ATC clearances or instructions that contain altitudes or vectors, and precede such readbacks with the aircraft identification to avoid any possible confusion.

SURPLUS MILITARY AIRCRAFT. Are they practical for civilians to own? That is the subject dealt with in a recently revised FAA brochure. Immediate considerations for a prospective purchaser of an ex-military airplane or helicopter are: Can it be certificated? Is it safe? Can you afford it? Will you be able to fly it? One way of learning if such an aircraft has certification potential is to find out if an FAA preliminary "screening" inspection was performed. (These inspections are done at the request of the owning military service prior to sale.) The brochure discusses the screening process and related subjects including registration and other forms needed; how to move the aircraft from the sale site; and how to receive notification of upcoming sales of surplus aircraft. The brochure, "Surplus Military Aircraft, A Briefing for Prospective Buyers" (AC 20-96) is free.

SO YOU WANT TO BE A MECHANIC? Persons interested in careers as aircraft maintenance technicians will be interested in the updated "Directory of FAA Certificated Aviation Maintenance Technician Schools", which lists such facilities by location, giving addresses and ratings (airframe, powerplant, or both). (Note: Certification of a school by FAA indicates it meets FAA requirements for the ratings issued, but does not necessarily indicate that the school has been approved for educational purposes by other Federal or State agencies. This information may be obtained from the school or the approving agency.) For a free copy of the Directory write to the address listed elsewhere in this column, mentioning name and number: AC 147-2R.

Advisory circulars mentioned are available free from DOT/FAA Distribution Unit, TAD 443.1, Washington, D.C. 20590.

JAWS. Ancient aircraft continue to fascinate aviation buffs, who flock to airshows by the thousands. Shown above is the Curtiss P-40 *Warhawk* of World War II fame. The airplane is shown in the famous shark-mouth design of the "Flying Tigers" who, led by Gen. Claire Chennault, destroyed 286 Japanese aircraft in just over six months, while losing only eleven planes. Some 14,000 P-40's were built by Curtiss between 1939 and 1944.

Potential Hazards of Airborne CB Radio Installations

Installing citizens band (CB) or amateur (ham) radios, or mobile telephones, in aircraft, can interfere with the approved avionics system unless certain installation and operational criteria have been met. Aircraft owners who are considering purchasing this type of equipment are urged to check applicable FAA and FCC regulations, since both are involved.

Additionally, the flight characteristics of the aircraft may be affected by improper installation of CB antennas (often more bulky than those normally used on aircraft). If the installation involves penetrating a pressurized area, FAA approval either by Supplemental Type Certificate or by FAA Major Repair and Alteration form may be required.

After installation, the aircraft should be inspected and signed off for return service by an appropriately certificated person. (Note that a mechanic needs an airframe rating to sign this work off.) In addition to entries in the aircraft maintenance records, revision may be needed of weight and balance data, operating limitations, etc.

Guidelines for installation and operation of these communication systems are contained in a new FAA Advisory Circular, "Auxiliary Two-Way Airborne Radio System Installations" (AC 20-98), available free from DOT/FAA Distribution Unit, TAD 443.1, Washington, D.C. 20590.

Safety Harness Required

A new FAA rule requires the installation of shoulder harnesses for the front seats of all small (12,500 pounds or less) airplanes manufactured after July 18, 1978. The new rule also requires that crew members have the harness fastened during takeoff and landing. Other seats in the airplane must be equipped with lap belts. Also, surrounding cabin areas, within striking distance of occupants' heads and torsos, must be free of potentially injurious objects, sharp edges, protuberances and hard surfaces. The new requirement, which does not affect previously manufactured small airplanes, was prompted by a safety recommendation from the National Transportation Safety Board and a petition for rule-making submitted by Ralph Nader.

Banning Guns at Airports

Carrying guns, explosive or incendiary devices into airports covered by security regulations would be a Federal offense under an FAA proposed rule. Existing FAA regulations make it an offense to carry a weapon aboard an aircraft but do not prohibit the possession of arms in a terminal. Although the present screening requirements have been in effect for more than four years, weapons continue to be detected in screening points in alarming numbers, many of them carried by persons meeting or seeing passengers off. Where these individuals are subject to criminal prosecution under local gun laws, the proposed rule would make them also subject to Federal civil penalties of up to $1,000 in fines. (The rule does not apply to weapons being legally and properly transported into or through the airport.)

Obstruction Rule Reviewed

Public comment is being sought by FAA on a proposed rule change that would more precisely define FAA's role in protecting the navigable airspace from the intrusion of unknown obstructions. Changes in notification procedures and the review process are also being considered for revision. Comments on this "Advance Notice of Proposed Rule Making" (Docket #16920) should be submitted by September 14, 1977 in duplicate to FAA, AGC-24, Washington, D.C. 20591.

New Equipment to Improve Terminal Radar Service

New equipment ordered by FAA will furnish radar data to tower controllers at 44 high-activity "satellite" airports where it is not now available. At some FAA tower-controlled airports which are located near other larger airports, radar service is provided to pilots by controllers in the radar room of the major airport. The new television microwave equipment will relay radar information from the major airport to the satellite control tower where it will be displayed on a TV-type screen.

The new service is expected to be particularly helpful to satellite controllers at night and in periods of poor visibility, when visual spotting of aircraft from the tower is most difficult. First of the new units will be delivered by next spring and all should be in use by the following spring.

In a separate action FAA has contracted to upgrade "airport surface detection radar", used to control and monitor aircraft movements on runways and taxiways. The new "ASDE-3" radar, designed to give a clearer outline of runway and taxiway areas on the screen and at the same time suppress radar returns from outside the areas, will be installed for testing at FAA's experimental center in Atlantic City, N.J., late in 1978.

TCA Data on Sectionals

Pilots who fly in the vicinity of airports that have "Terminal Control Areas" (TCAs) will find that recent issues of sectional charts (dated April 1977 or after) show the complete TCA, including altitude of various floors, ceilings and corridors, rather than just the outermost boundaries that were formerly shown on sectionals.

Also added to sectional charts (July 1977 or later) are "maximum elevation figures" for each quadrangle. These figures represent the highest known feature in each square, including terrain *and obstructions*, such as trees, antennas, towers, etc. Printed in bold blue type, the maximum elevation figure replaces the previous used "maximum terrain elevation" which indicated terrain but not obstructions.

FORUM

FAA GENERAL AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA GENERAL AVIATION NEWS, AFS-807, Washington, D.C. 20591.

• Lightships: A Vanishing Breed •

In your article concerning sectional chart symbols in the April issue, you printed the chart legend that showed a symbol for a light ship. Please be advised that with the possible exception of Nantucket Shoals, all light ships in the United States have been replaced by either light towers or sea buoys.

G. B. Dilks
Earleville, Md.

The U.S. Coast Guard advises that three lightships are presently in service: the "Columbia", which is based off the coast of Oregon; the "Nantucket" near Nantucket Shoals; and the "Relief" at Boston. Not a large number, true—but if lightships ever make a comeback our chart-makers are ready.

• First at the White House

In reference to the article about "Harold Pitcairn and His Tilted Windmills" in the May issue, I wish to correct the statement that 1931 was the first time anyone landed an aircraft on the White House Lawn. On July 14, 1911 Harry Atwood accomplished this feat, thereby beating Pitcairn by twenty years.

Jack S. Oliver
Oklahoma City, OK

• Night and X-C Time

I hope you can help me with the following two questions on logbook entries. First, when may a pilot legally log "night" time? I have heard several definitions and want to be sure I am doing it right.

Second, do you have a definition of "cross-country" flights? The FARs define it for student requirements (more than 25 nautical miles, etc.) and for private and commercial requirements (more than 50 nautical miles, etc.) but what about for other pilot ratings? I want to be sure that my logbook is being accurately kept.

Steven D. Hallock
Manhatten, Kans.

In civil aviation the generally accepted definiton of "night" time is that in FAR 61.57 (d), which refers to night experience as "the period beginning one hour after sunset and ending one hour before sunrise (as published in the American Air Almanac). Note that military logging practices may be different.

As for cross-country flights, these are defined in the requirements for Student, Private and Commercial pilots. For an Instrument Rating or an Airline Transport Pilot Rating a flight is considered a cross-country flight if it involves landing at a point more than 50 miles from the point of departure. Although not incorporated in any regulation, this latter figure was set in an interpretation issued by the FAA chief counsel on July 1, 1975.

• The Shark Screen

In your June article "Survival at Sea" there is mention of a "shark screen". This is a waterproof bag made of thin, strong, but light synthetic material that can be folded into a small package and carried in a lifevest.

We are interested in receiving more information on the shark screen, including where they can be purchased.

Mrs. Mary Landgraf
Orlando, Fla.

The shark screen pictured in June was developed for the Navy by Dr. C. Scott Johnson, who has commercial rights on the patent. It is not presently being marketed commercially, but it might be if sufficient interest is shown. Dr. Johnson would be interested in your comments. Write him at 4444 W. Point Loma Blvd., Apartment 66, San Diego, California, 92107.

• Transiting MOAs

My bias against military aviation is probably showing after reading "Respective Military Airspace" (March, 1977) but the other side of the airspace story should be told—specifically in the case of the MOAs (Military Operations Areas.) Your statement that "pilots can transit MOAs on their own responsibility" is in my opinion misleading. As I understand it, a MOA depicts an area of increased air activity but normal flight rules for both civil and military aircraft are still in use and military aircraft are obliged to look for civilian planes in VFR conditions. If this is not true the collision risk is not acceptable in a MOA. If responsibility is not equally divided there will soon be no safe airspace left.

Beverly E. Howard
Spicewood, Texas

"Military Operations Areas", or MOAs, are shown on aeronautical charts to inform pilots about where, when and at what altitudes they might encounter military flight operations, including intensive student jet training.

The responsibility for seeing and avoiding other aircraft, as far as meteorological conditions permit, applies to military as well as civilian pilots in a MOA, as in other airspace. However, most civilians prefer to avoid "hot" MOA altitudes because of the potential hazard of penetrating airspace with a high concentration of pilots conducting practice maneuvers in high-speed jets, where the closure rate challenges human perception.

• Future Pilot

I am 15 years old and I am very interested in learning to fly. My friend Ralph, a private pilot, lets me read your magazine all the time. Could you give me some advice on the proper procedure for learning how to fly and what material would be best for a beginner?

Ralph Roberts
Taylor, MI

The FAA booklet "Student Pilot Guide" (AC 61-12H) will probably answer most of your questions on taking flight training and getting a pilot certificate. It is sold at Government Book Stores or by mail from Superintendent of Documents, GPO, Washington, D.C. 20402. Price is $1.50.

As you move closer to taking flying lessons you might be interested in the "Pilot's Handbook of Aeronautical Knowledge" (AC 61-23A), also available from the above source for $5.30. This book includes a great deal of the information you will be studying in ground school in preparation for your private pilot written examination.

• Skelton and the Stinker

I read the article in the April 1977 issue on Curtis Pitts. I have never had the thrill of flying one but was well acquainted with Betty Skelton when she started flying the Little Stinker in Tampa in the late 40's and early 50's. I flew a number of hours with her father's school at Peter O. Knight Airport out of Tampa Bay and had the pleasure of flying formation with Betty going to a couple of airshows. I was flying a Ryan PT-22, a fun snap-roller, but a bona-fide rock.

I haven't heard anything about Betty since she was test-driving cars on TV commercials. If you have an opportunity, tell her I said "Hello". She will very probably respond with "Who?"

Tom Demery
Arizona DOT Airports Engineer
Phoenix

• Birds of a Feather

Before fall would you please give some background on how dangerous migratory birds are to a pilot?

Mark Smith
Superior, Wis.

Aircraft/bird collisions can be very damaging—to both parties. Along the bird "flyways", which cut directly across your part of the country, the busy season will be from mid-October through November. However, not all bird strikes involve migratory birds. Many very serious bird accidents have occurred in the vicinity of airports. For more on that subject, see AIM, Part 1 and also a feature article on the subject in the next issue of this magazine.

INSTRUMENT CORNER

• VOR-A Approaches

Could you tell me the distinction between a VOR-1 and a VOR-A approach procedure? I have been unable to obtain an explanation that is not contradicted by some published approach.

Walter A. Steinberg
Huntington Station, N.Y.

The reason you could not find the difference between VOR-1 and VOR-A approaches is because there is no difference, except in the titles. VOR-A is the current terminology for what used to be called a VOR-1 approach procedure. In either case the approach is one where there are only circling minimums. As the instrument procedures come up for revision, all VOR-1 approach titles are being phased out in favor of the newer lettered suffix to avoid any possible confusion between a number in the title of the approach and a numbered runway.

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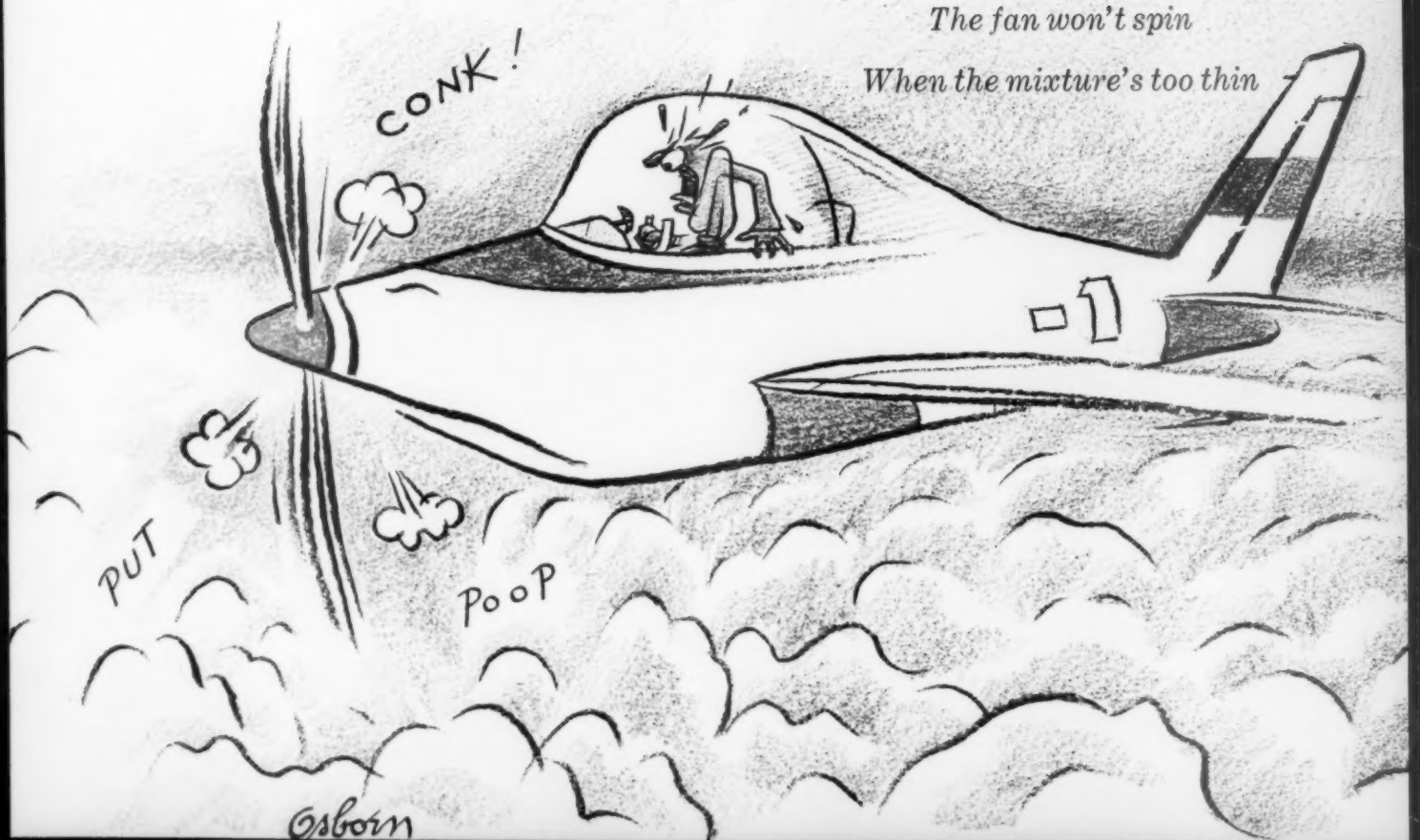
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